

# SOW CHANGE PROPOSAL

SOW-03-837-2-09109A-2/1

Change 2

24 August 2003

## STATEMENT OF WORK (SOW)

for the

Inspection and Repair Only As Necessary (IROAN) of the  
High Speed, High Mobility Crane (HSHMC)  
NSNs 3810-01-268-1737 and 3810-01-320-1920

SOW Control Number SOW-03-837-2-09109A 2/1 Change 1 and SCP 1

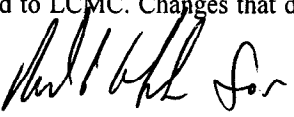
Replace SOW-03-837-2-09109A-2/1 dtd 1 Oct 01 and SCP 1 dtd 25 Jun 01 in it's entirety with SOW-03-837-2-09109A-2/1 dtd 8 Nov 03

If approved, does this proposed change have the potential to have an impact on the cost or schedule?

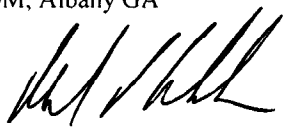
\* Yes /X/ or No /\_/ (Place and X in the appropriate block)

\*Changes that have the potential to impact cost or schedule will be reviewed by Maintenance Directorate (MD) and an impact statement provided to LCMC. Changes that do not have the potential to impact cost or schedule may not be reviewed by MD.

Change Submitted by:

  
James A. Adams  
19 August 2003  
Equipment Specialist  
Code PMM152  
MARCORSYSCOM, Albany GA

Change Approved by

  
Mike Callahan  
19 August 2003  
Logistics Management Specialist  
Code PMM152  
MARCORSYSCOM, Albany, GA

Change Disapproved by \_\_\_\_\_ (Name)

\_\_\_\_\_ Date

Logistics Management Specialist  
\_\_\_\_\_  
(Code \_\_\_\_\_)  
MARCORSYSCOM, Albany, GA

STATEMENT OF WORK  
FOR THE  
INSPECTION AND REPAIR ONLY AS NECESSARY (IROAN)  
CRANE, TRUCK MOUNTED  
(HIGH SPEED, HIGH MOBILITY CRANE (HSHMC))



NSN 3810-01-268-1737  
AND  
NSN 3810-01-320-1920

## TABLE OF CONTENTS

Section and Reading	Page
1.0 SCOPE	1
1.1 Background	1
1.2 Item Identification	1
2.0 APPLICABLE DOCUMENTS	2
2.1 Military Standards	2
2.2 Other Government Documents and Publications	2
2.3 Industry Documents	3
3.0 REQUIREMENTS	4
3.1 General Tasks	4
3.2 IROAN Objective and Functions	4
3.3 Specific Tasks	5
3.3.1 Phase I Pre Induction	5
3.3.2 Phase II IROAN	6
3.3.3 Phase III Inspection, Testing and Acceptance	21
3.3.4 Phase IV Packing Handling Storage and Transportation (PHS&T)	21
3.4 Configuration Management	22
3.4.1 Configuration Status Accounting (CSA)	22
3.4.2 Configuration Control	22
3.5 Government Furnished Equipment/Government Furnished Materiel (GFE/GFM)	22
3.6 Contractor Furnished Materiel (CFM)	23
3.7 Quality Assurance Provisions	23
3.8 Acceptance	24
3.9 Rejection	24
4.0 REPORTS	24
4.1 Pre-Induction checklist	24
4.2 Final Inspection Checklist	24
4.3 Configuration Checklist	25
4.4 Certification of Load Test /Condition Inspection Report	25
Appendix A HSHM Cranes Pre-Induction Checklist	A-1
Appendix B HSHM Cranes Final Inspection Checklist	B-1
Appendix C Configuration Checklist	C-1

Statement of Work  
for the  
High Speed, High Mobility Crane (HSHMC)  
NSN 3810-01-268-1737 and NSN 3810-01-320-1920

1.0 SCOPE. This Statement of Work (SOW) establishes and sets forth tasks and identifies the work efforts that shall be performed by the Contractor. This document contains the minimum requirements to assemble, integrate, make fully operational, calibrate, install, test and inspect the Crane, Truck Mounted, NSN 3810-01-268-1737 and NSN 3810-01-320-1920, Weapon System Code Z3, to a serviceable condition (Condition Code A). Condition Code A is defined as Serviceable/Issuable without qualification, new, used, repaired or reconditioned material which is serviceable and issuable to all customers without limitation or restriction. This includes material with more than six months shelf life remaining. The National Stock Numbers (NSNs) listed here shall be known as the HSHM Cranes. This SOW, along with the HSHM Cranes Technical Manuals, covers the minimum requirements applicable to the restoration of the HSHM Cranes. The HSHM Cranes Technical Manuals set forth guidelines within which the HSHM Cranes shall be refurbished, repaired and restored. The basic configuration of the HSHM Cranes is established by the HSHM Cranes Technical Manuals that are currently in the Marine Corps inventory. All materiel (including repair parts) shall be provided by the Contractor. The Contractor shall perform installation and testing. All special tools and test equipment required to perform any task on the HSHM Cranes are listed in the HSHM Cranes Technical Manuals, and shall be provided by the Contractor.

Questions related to this SOW should be addressed to Marine Corps Systems Command (MCSC), Code PMM152, Bldg 3700, Room 310W, 814 Radford Blvd., Suite 20343, Albany, GA 31704-0343, commercial telephone number (229) 639-6983, DSN 567-6983.

Reports required by this SOW may be duplicated and provided by the Contractor by electronic means. Microsoft Word is preferred but Contractor format may be accepted if agreed to prior to submission.

1.1 Background. IROAN is defined as "That maintenance technique which determines the minimum repairs necessary to restore equipment components and assemblies to prescribed maintenance serviceability standards by utilizing all available diagnostic equipment and test procedures in order to minimize disassembly and parts replacement."

1.2 Item Identification. The HSHM Crane NSN 3810-01-268-1737 is the basic crane. NSN 3810-01-320-1920 is the Pile Driver Crane and differs from the basic crane as follows:

- a. This crane will accept Pile Driving Equipment.
- b. The slewing ring upper frame allows attachment of the Piling Driver stabilization braces to this plate.

c. There is additional hydraulic system quick disconnect located on the winch control valve located on the main boom assembly.

d. The boom counter weight has been drilled and tapped to accept an auxiliary winch.

e. Boom counter weight work light has been relocated on counter weight. This SOW is applicable to both the Basic Crane and the Pile Driving Crane.

**2.0 APPLICABLE DOCUMENTS.** The following documents form a part of this SOW to the extent specified. Unless otherwise specified, the issues of these documents are those listed in the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto which is in effect on the date of solicitation. In the event of conflict between the documents referenced herein and the contents of this SOW, the contents of this SOW shall be the superseding requirements.

### **2.1 Military Standards**

MIL-STD-129	DoD Standard Practice: Military Marking for Shipment and Storage
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-642	Identification Marking of Combat and Tactical Transport Vehicle

### **2.2 Other Government Documents and Publications**

ATPD 2241	Vehicles, Wheeled: Preparation For Shipment and Storage of
DoD 4000.25-1-M	Military Standard Requisitioning and Issue Procedures (MILSTRIP)
TM-4750-15/1	Painting and Registration Marking for Marine Corps Combat and Tactical Equipment
TM 09109A-10/1	Operators Manual w/chgs 1 and 2, Revision 1, and Supplement 1
TM 09109A-24/2	Service Manual w/chgs 1, 2, 3, and Supplement 1
TI-09109-25/1	Test and Bleed Procedures for Hydraulic Suspension System on the High Speed, High Mobility Crane
TI-09109-25/2	Hook Block Securing Procedures for High Speed, High Mobility Cranes

SI-09109-15/1	Repair Procedures For Load Moment System Components Used On High Speed, High Mobility Cranes
MI-09109-35/1	Installation Of Mechanical Boom Angle Indicator On High Speed, High Mobility Cranes
MI-09109-45/2	Installation Of Torsion Bar Reinforcement Plate/Repair Of Existing Mounting Plate For High Speed, High Mobility Crane
SL-3-09109	Components List For Crane, Truck Mounted
SL-4-09109A	Repair Parts List For Crane, Rough Terrain, Heavy, Wheel Mounted
TM 09109A-24/4	Simplified Test Equipment For Internal Combustion Engines Reprogrammable (STE/ICE-R)
MCO P11262.2A	Inspection, Testing, and Certification of Tactical Ground Load Lifting Equipment
TM 3080-34	Corrosion Prevention and Control
TM 4700-15/1H	Ground Equipment Record Procedures
TM 9-2610-200-14	Care, Maintenance, Repair & Inspection of Pneumatic Tires and Inner Tubes
Marine Corps Drawing 2003A095, CAGE 01365	Piston Modification Suspension Cylinder 25 Ton Crane

#### Military Handbook (Guidance Only)

MIL-HDBK-61	Configuration Management Guidance
-------------	-----------------------------------

### 2.3 Industry Documents

ANSI/ISO/ASQC Q9001-2000	Quality Management Systems-Requirements
ISO 4021	Hydraulic Fluid Power-Particular Contamination Analysis-Extraction of Fluid From Lines of an Operating System

ANSI/NFPA/JIC  
B93.19M

Hydraulic Fluid Power-System Standard for Stationary  
Industrial Machinery

Industry Standards (Guidance Only)

ANSI/EIA-649

National Consensus Standard for Configuration Management

Copies of Military Standards and Specifications are available from the DOD Single Stock Point, Document Automation and Production Service, Building 4/D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, commercial telephone number (215) 697-2179 or DSN 442-2179, or <http://www.dodssp.daps.mil>. Copies of other government documents and publications required by contractors in connection with specific SOW requirements shall be obtained through the Contracting Officer: Contracts Department (Code 891), P.O. Drawer 43019, 814 Radford Blvd., Marine Corps Logistics Command, Albany, Georgia 31704-3019, commercial telephone number (229) 639-6761 or DSN 567- 6761. Copies of engineering drawings, if applicable, shall be obtained from Commander (MCSC), PMM152, Bldg.3700, Room 310W, 814 Radford Blvd., Suite 20343, Albany, GA 31704-0343, commercial telephone number (229) 639-6983, DSN 567-6983.

### 3.0 REQUIREMENTS

3.1 General Tasks. In fulfilling the specified requirements, the Contractor shall render, yet shall not be limited to the following tasks:

a. Provide materials, labor, facilities, repair parts and services necessary to troubleshoot, test, diagnose, engineer, integrate, install, repair and calibrate as required to make fully operational the HSHM Cranes.

b. Conduct final on-site testing for witness by the MCSC, Code PMM152, Albany, GA and/or their representatives.

c. The Contractor shall be responsible for all structural, electrical and mechanical requirements associated with the repair and restoration of the HSHM Cranes.

3.2 IROAN Objective and Functions. After IROAN, the HSHM Cranes shall have, as a minimum, the following characteristics:

a. Reliable as per system specifications. System specifications for the HSHM Cranes can be found throughout the HSHM Cranes Technical Manuals. These specifications are not always expressed in numbers. In some cases, specifications are expressed as an inspection. Specifications are listed with each assembly/subassembly's remove, inspect, and repair procedures in the Technical Manual that addresses the component being overhauled or IROANed.

- b. Maintainable.
- c. Serviceable (Condition Code "A").
- d. Latest Marine Corps Configuration.
- e. All HSHM Cranes systems and components shall operate as designed intended.
- f. All HSHM Cranes shall have a like new appearance.

3.3 Specific Tasks. The following tasks describe the different phases for the IROAN of the HSHM Cranes.

Phase I	Pre-Induction (Initial Inspection)
Phase II	IROAN
Phase III	Inspection, Testing and Acceptance
Phase IV	Packaging, Handling, Storage and Transportation (PHS&T)

3.3.1 Phase I Pre-Induction

a. The Contractor shall inspect in detail HSHM Cranes transported to the Contractor for IROAN under provisions of this SOW. The Contractor shall ensure the inspection is sufficient to determine the condition of the inspected HSHM Cranes and the extent of work and repair parts required. The findings of this inspection shall be annotated on the HSHM Cranes Pre-Induction Checklist (Appendix A) and shall be maintained and made available upon request by MCSC, Code PMM152, Albany, GA and/or their representatives. The HSHM Cranes Initial Inspection Checklist may be duplicated in an electronic database and maintained in that database. If data is selected to be provided electronically to MCSC, Code PMM152, Albany, GA and/or their representatives, the database program must be agreed to by both the Contractor and MCSC, Code PMM152, Albany, GA and/or their representative.

NOTE: Since the Truck Engine and Transmission to include Torque Converter shall be totally overhauled, a Pre-Induction Analysis is not required for these assemblies.

NOTE: Since the Boom Assembly shall be totally overhauled, a Pre-Induction Analysis is not required for this assembly.

b. Test equipment shall be used to determine that assemblies and subassemblies meet prescribed reliability, performance, and work requirements. In those cases when conformance to the SOW cannot be certified through existing inspection and testing procedures and by use of diagnostic equipment, the assembly shall be removed, disassembled, inspected, tested and repaired to the degree necessary to assure full conformance with this SOW. HSHM Cranes will be operational tested 100 per cent in accordance with this SOW.



c. Oil seals and gaskets leakage. Evidence of lubricating or hydraulic oils passing through or around a seal is in itself not a defect; however, consideration must be given to the fluid capacity in the item being checked/inspected. Inspection shall normally be performed during and immediately following an operational test, but not of sufficient duration to allow the fluids to return to ambient temperatures. The following shall be used as a guide to determine degree of oil loss:

(1) Class I - Seepage of fluid (indicated by wetness or discoloration) not great enough to form drops.

(2) Class II - Leakage of fluid great enough to form drops, but not enough to cause drops to fall from the item being checked/inspected.

(3) Class III - Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

A CLASS I OR II LEAK, EXCEPT FUEL SYSTEM, BRAKE SYSTEM, AND POWER STEERING SYSTEMS, IS AN ACCEPTABLE CONDITION AT ANY TIME, AND DOES NOT REQUIRE CORRECTIVE ACTION.

3.3.2 Phase II - IROAN. After pre-induction tests and inspections have been completed, IROAN of the HSHM Cranes shall be accomplished in accordance with this SOW and the HSHM Cranes Technical Manuals (Service and Parts Manuals). Deficiencies noted on the HSHM Crane Pre-Induction Checklist (Appendix A) during Phase I shall be repair/replaced. The following efforts shall be performed as part of the IROAN:

a. Service and Parts Manual: The Service and Parts Manuals listed below contain repair procedures and repair parts for the complete HSHM Cranes. The Trouble Shooting Guide contained in these manuals are to be used along with the Pre-Induction Checklist in helping identify deficiencies with the HSHM Cranes. Repair procedures contained in these manuals are to be used to repair deficiencies identified on the Pre-Induction Checklist.

TM 09109A-10/1	Operators Manual w/chgs 1 and 2, Revision 1, and Supplement 1
TM 09109A-24/2	Service Manual w/chgs 1, 2, 3, and Supplement 1
TI-09109-25/1	Hydraulic System Test Procedures F/HSHMC
TI-09109-25/2	Hook Block Securing Procedures for High Speed, High Mobility Cranes
SI-09109-15/1	Repair Procedures For The Load Moment System Components Used On The High Speed, High Mobility Cranes

MI-09109-35/1	Installation Of The Mechanical Boom Angle Indicator On High Speed, High Mobility Cranes
MI 09109-45/2	Installation Of Torsion Bar Reinforcement Plate/Repair Of Existing Mounting Plate For High Speed, High Mobility Crane
SL-3 09109	Components List For Crane, Truck Mounted
SL-4-09109A	Repair Parts List For Crane, Rough Terrain, Heavy, Wheel Mounted
TM 09109A-24/4	Simplified Test Equipment For Internal Combustion Engines Reprogrammable (STE/ICE-R)

The Service and Parts Manuals listed may contain provision for corrosion control, painting, and packaging. Provisions for corrosion control, painting and packaging are provided within this SOW and shall be the superseding requirement.

b. Detailed Mechanical Work: HSHM Cranes received for IROAN shall be worked in accordance with the following paragraphs. All discrepancies noted on the IROAN Pre-Induction Checklist shall be repaired/replaced.

c. Hardware

(1) Replace broken, unserviceable and/or missing hardware, including nuts, bolts, screws, washers, turn lock fasteners, safety, and one-time use items, etc., in accordance with the IROAN. Unserviceable would include any of the above that failed to function properly.

(2) Ensure proper hardware locking devices are present on all moving mechanical assemblies.

(3) Hardware normally supplied with commercial parts shall be used unless specifically prohibited.

(4) Hardware used in this IROAN shall be in accordance with existing technical publications.

d. Engine Assembly, 3208 Caterpillar

(1) The truck engine, shall be totally overhauled in compliance with TM 09109A-24/2, Subsection 4B. Engine oil filters, fuel/water separators are to be replaced 100 percent.

e. Fuel System

(1) Replace fuel filters 100 percent. Inspect water separators and fuel priming pump for damage, leakage, and proper operation. Clean, repair, replace separators and priming pump as needed. Inspect filter, water separator, and priming pump fuel lines for damage that may restrict fuel flow or that may result in leakage after short use. Fuel line fittings shall not be rounded off or be in such a condition that will prevent them from being tightened to correct torque specifications. Repair/replace procedures are found in TM 09109A-24/2, Subsection 4B.

(2) Inspect fuel tank for cracks or leakage. Repair as necessary. Inspect fuel tank screen for damage. Repair/replace as necessary. Inspect fuel sender unit for correct operation. Fuel level gauge must register equivalent to tank level. Repair/Replace as needed.

(3) Inspect fuel supply lines, both metallic and nonmetallic, for cracks or damage that may restrict fuel flow or may result in leakage after short use. Fuel line fittings shall not be rounded off or be in such a condition that will prevent them from being tightened to correct torque specifications. Repair/replace as necessary. Inspect and test fuel tank vent hose and fittings. Repair/replace as necessary. Repair/replace procedures can be found in TM 09109A-24/2, Subsection 4B.

(4) Inspect and test operation of the throttle control system for both lower and upper cab assemblies. Inspect and test operation of the throttle control valves and the air throttle cylinder assembly located on the engine. Repair/replace as required. Inspect system airlines and fittings. Airline fittings shall not be rounded off or be in such a condition that will prevent them from being tightened to correct torque specifications. Airlines shall not contain leakage or damage that may result in breakage after short use. Repair/replace as necessary.

f. Engine Cooling System

(1) Inspect and test cooling system by pressurizing the system 5 PSI above the pressure marked on the radiator pressure cap. Check all connections and hoses for the cooling system for leakage. Cooling System shall retain a pressure reading of 5 PSI above pressure marked on radiator cap for at least five minutes. Loss of coolant is not permitted under the provisions of this SOW.

(2) Inspect radiator for cracks, leaks, bent fins, and clogging that will prevent airflow through radiator. Clean, repair or replace radiator as required. Reverse flush, clean, and inspect radiator core 100 percent. Radiator shall be cleaned internally 100 percent by "roding out" the radiator core or by ultrasonic cleaning. Straighten bent fins that can be straightened.

(3) Inspect fan assembly for breaks, bends, and missing rivets. Inspect fan assembly for missing bolts and washers. Repair/replace as required.

(4) Inspect fan shroud for breaks or cracks. Inspect fan shroud and guard for missing mounting hardware (nuts, bolts, washers, and brackets). Repair/replace as required.

(5) Replace hose clamps 100 percent. Replace coolant hoses 100 percent.

(6) Replace coolant. Antifreeze protection shall be to a temperature of -35 degrees Fahrenheit.

g. Engine Accessories

(1) Cold Start Assembly. Inspect and test the cold start assembly. Clean all components with suitable cleaning solvent. Inspect all tubes, electrical wires, and components for damage and wear. Cold Start Kit shall function as intended. Cold Start Kit shall be repaired of all deficiencies annotated on the Pre-Induction Checklist.

(2) Air Cleaner Assembly. Inspect air cleaner assembly for corrosion, damage and leakage. Replace the air cleaner indicator 100 per cent. Repair/replace air cleaner assembly/components as required. Replace air filters 100 percent.

(3) Alternator. Alternator shall meet alternator test checks identified in STE/ICE-R TM 09109A-24/2. Repair/replace alternator as required. Replace alternator drive belts 100 percent. Assure belt tension is set at belt tension gauge reading of 120 plus/minus 5. Replace alternator drive pulley if damaged.

(4) Engine Starter. Engine Starter and starter solenoid shall meet starter/solenoid test checks identified in TM 09109A-24/2. Repair/replace starter and/or starter solenoid as required.

h. Vehicle Electrical System. The HSHM Cranes consist of a lower and upper cab assembly. Both cabs contain gauges, meters, windshield wiper assemblies, switches, and other various electrical components. Both cabs components shall be inspected, operational tested, repaired or replaced as required. The inspect procedures will not identify lower or upper cab unless a component is located only in that cab.

Inspect all wiring harnesses, battery cables for corrosion, bent or missing pins, and ripped or torn insulation and tie wraps. Repair/replace all missing and bent pins. Repair of insulation less than four inches in length may be accomplished using electrical tape. Tears or rips in excess of four inches shall require installation of new conduit. Corrosion shall be removed from components. Upon removal of corrosion, if component does not function properly, replace component. Replace all damaged battery cables. Replace any missing or damaged tie wraps.

The following electrical systems shall be inspected and tested for proper operation.

(1) Inspect electrical panel gauges and meters for proper operation. Replace any electrical gauge or switch that does not function properly after assuring that the sending unit is not defective. Replace hour meters if nonfunctional.

(2) Inspect instrument panel warning lights. Replace warning lights that are not operational. Test warning light activation devices to assure they function correctly. Repair/replace as required.

(3) Inspect slaving receptacle for proper operation. Repair/replace as required.

(4) Inspect and test operate all switches, fuses and circuit breakers. Replace electrical switches that do not operate as intended. Replace all relays, fuses, and circuit breakers that are not functioning properly or are blown out.

(5) Inspect all wiring harnesses. Replace any wiring that is frayed or broken. Electrical wiring with deteriorated or defective insulation shall be repair/replaced as required. Repair by splicing is acceptable when the wire used to make the splice is the same wire size and color. The wire splice joint shall be soldered and covered by heat shrinkable electrical insulation tubing shrunk to finished wire size and extending one inch beyond each side of the spliced joint.

(5) Inspect and operational test windshield wiper assemblies. Inspect and operational test windshield wiper and washer assemblies for proper operation. System shall operate as intended. Adjust blade park to specifications. Replace wiper blades 100 percent.

(6) Vehicle batteries shall be replaced 100 percent with wet, fully charged batteries. All battery to ground cable/straps shall be replaced. Battery clamps shall be clean and securely fastened to battery post. No cracks are allowed. Battery box shall be free of corrosion and damage. Clean and repair as needed. Battery hold down devices shall operate as intended. Repair/replace as required.

(7) Inspect the headlights, blackout lights, turn signals, rear composite lights, floodlights, reflectors and instrument panel lights for cracks, corrosion, moisture, and broken and blown bulbs. Replace any headlights, blackout lights, turn signals, floodlights, side marker lights reflectors, and instrument panel lights that are blown out or broken.

(8) Inspect and operational test defrost fan assemblies. Inspect, clean, and/or replace fan blades and guards as required. Inspect fan motor for proper operation. Motors shall operate as intended without overheating or locking up. Replace motor as required.

(9) Inspect Collector Ring Assembly. Inspect and clean slip rings and brush holders. Inspect brushes for wear. Replace as needed. Collector Ring Assembly shall operate as intended.

i. Carrier Transmission and Torque Converter. The Carrier Transmission, to include the Torque Converter, shall be totally overhauled in compliance TM 09109A-24/2, Subsection 4C.

(1) Inspect metallic and nonmetallic hydraulic lines and hoses for damage that may resist flow or may result in rupture. Check hose and line fittings to assure they are tight and do not

leak. Replace lines, hoses and fittings that are rounded off and cannot be tightened. Replace transmission filter 100 percent.

(2) Inspect and operational test lower and upper cab transmission shift lever assemblies, Low/High range shifter, transmission electrically controlled shift control valve assembly, and wiring harness for proper operation. Repair/replace components as required. Repair wiring harness in accordance with Section 3.3.2, Paragraph H, Subparagraph 5.

(3) Inspect and test transmission oil cooler and hydraulic lines and hoses. Inspect metallic and nonmetallic hydraulic lines and hoses for damage that may restrict flow or may result in rupture. Check hose and line fittings to assure they are tight and do not leak. Replace lines, hoses and fittings that are rounded off and cannot be tightened. Replace all hydraulic hoses that contain damage that may result in failure. Inspect oil cooler for cracks, leaks, bent fins, and clogging that will prevent airflow through cooler. Clean, repair or replace oil cooler as required. Reverse flush, clean, and inspect oil cooler core 100 percent. Straighten bent fins that can be straightened.

j. Drive Shafts. Inspect universal joints for excessive wear or damage. Replace as needed. Inspect slip joint and drive shaft for cracks or damage. Repair/replace as required. Repair/replace procedures are found in TM 09109A-24/2, Subsection 4D.

k. Axles. This vehicle is equipped with four axles: two drive-steer axles at the front, and two rigid drive axles at the rear. Both inner axles (number two and number three axles) use split torque differentials to provide drive power to the number one and number four axles.

(1) Front and Rear Axles. Operational test axles. Special emphasis will be in place on abnormal mechanical noises, vibrations, and overheating of the axles that may be an indicator of internal axle damage. Axles that demonstrate these conditions shall be removed, disassembled, inspected, and repaired as needed. Axles shall be free of structural damage and leakage. Axle oil shall contain no metal chips. If metal chips are found in the oil, remove, disassemble, inspect, and repair axles as needed. Axles shall operate as intended.

(2) Front Axles. Inspect steering pivot and spindle assemblies for corrosion, damage, leakage, smooth operation, and looseness. Axle steering components shall contain no corrosion or damage that may prevent proper operation and wheel alignment. Repair/replace procedures are found in TM 09109A-24/2, Subsection 4E.

l. Suspension. Vehicle suspension system shall operate as intended. Suspension components are to be inspected for corrosion, leaks and damage that may prevent proper operation. Suspension components are:

(1) Torque Rods

(2) Suspension Cylinders

- (3) Accumulators
- (4) Suspension Lock Valves
- (5) Pressure Reducing Valve
- (6) Check Valves
- (7) Hydraulic Hoses, Fittings, and Clamps

NOTE: Suspension Cylinders are to be rebuilt 100 percent. If suspension cylinders are beyond rebuild, suspension cylinders are to be replaced with new cylinders. All suspension cylinder pistons shall be modified to Marine Corps drawing 2003A095, CAGE 01365. All seals and wear bands shall be replaced to accommodate the modified piston. This requirement applies to new suspension cylinders that are purchased through the supply system or the OEM.

Repair/replace faulty suspension components as needed. Check accumulator nitrogen precharge. Charge shall be 440 plus/minus 40 psi at 70 degrees fahrenheit. Suspension shall be bled of all air. Vehicles, with the suspension in the unlock mode, shall maintain a position that does not exceed a two inch difference in height from the port side of the vehicle to the starboard side of the vehicle. This measurement shall be from the surface on which the vehicle is parked. Measurement shall be taken as far from vehicle center as possible and from the same reference point on each side of the vehicle. Replace hydraulic hoses 100 percent. Repair, replace, and suspension bleed procedures are found in TM 09109A-24/2, Subsection 4F.

m. Vehicle Tires.

(1) Test Procedures. The tire inspection checklist contained in TM 9-2610-200-14 shall be used to document the tire inspection and shall be provided as part of the Pre-Inspection Report. Inspect tires for correct inflation, cupping, chunking, cuts and cracks. TM 9-2610-200-14, Section 2-37, Visual Guide for Technical Inspection and Classification of Tires: This technical inspection shall be used to distinguish between repairable and non-repairable defects and serviceability of tires.

(2) Pass/Fail. All tires shall meet classification code "B" as identified in TM 9-2610-200-14. Recapped tires are not permitted. Each tire shall have at least 25 percent or more of thread remaining and be in good serviceable condition. All tires on a vehicle shall be matched to provide proper performance and approximately equal life. Tires shall not show evidence of cupping or chunking. Tires shall not have cuts or cracks greater than one inch in length, 1/8 inch wide. Tires shall not have cuts or cracks, regardless of length that extend to the fabric. Rubber separation or bulges on tire sidewalls and thread area are not acceptable. Any damage to the tire bead is not acceptable.

n. Hydraulic System. The HSHM Cranes hydraulic system is a system made up of pumps, motors, actuators, hoses, piping, a rotary joint (swivel), control valves, filters, reservoir and other

components that are used to transfer power. HSHM Cranes hydraulic system shall be inspected and free of all problems identified in the hydraulic trouble-shooting guide. Hydraulic filters shall be replaced 100 percent. Inspect metallic and nonmetallic hydraulic lines and hoses for damage that may resist flow or may result in rupture. Replace hoses and lines as needed. Check hose and line fittings to assure they are tight and do not leak. Replace lines, hoses and fittings that are rounded off and cannot be tightened.

**NOTE**

**Hydraulic system shall be checked for contamination using ISO 4021 or NFPA B93.19M procedures prior to operational testing. If water is found in reservoir, drain a sufficient amount of hydraulic oil to remove any water that has settled in the reservoir. If complete system is contaminated, flush system using procedures found in TM 09109A-24/2 Subsection 5B, Paragraph 15 prior to operation.**

Hydraulic hose, piping, filters, and fitting maintenance procedures are found in TM 09109A-24/2, Subsection 5B. Hydraulic pump troubleshooting shooting guide, repair and replace procedures are in TM 09109A-24/2, Subsection 5C. Hydraulic swivel repair/replacement procedures are found in TM 09109A-24/2, Subsection 5D. Hydraulic system valve repair/replacement procedures are found in TM 09109A-24/2, Subsection 5E.

o. Boom Assembly. The boom assembly shall be rebuilt 100 percent. The Boom Assembly consists of five major components. These 5 components are to be inspected, tested, repaired, or replaced as indicated.

(1) Boom Assembly. Remove number two and number three boom sections as an assembly. Removal of these two sections should contain boom hoist cylinder, boom telescope cylinders, boom hoist and telescoping control valves and other internal components of the boom. If removal of these two sections does not allow for the removal of the other components identified, removal of all three-boom sections is then required. Repair/replacement procedures are found in TM 09109A-24/2 Subsection 6B.

(2) Boom Hoist Cylinder. Rebuild cylinder 100 percent. If cylinder is beyond rebuild, replace with a new cylinder. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 6C.

(3) Boom Telescope Cylinders. Rebuild cylinders 100 percent. If cylinders are beyond rebuild, replace with a new cylinders. Repair/replacement procedures are found TM 09109A-24/2, Subsection 6D.

(4) Boom Hoist and Telescope Control Valves, Hydraulic Hoses. Rebuild hoist and control valves 100 percent. If valves are beyond rebuild, replace with a new valves. Replace boom internal hydraulic hoses 100 percent. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 6E.



(5) Boom Adjustment and Alignment. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 6F.

All components shall meet or exceed requirements of Condition Inspection Report contained within TM 4700-15/1H.

p. Load Hoist Winch Assembly. HSHM Cranes load hoist winch assembly shall be inspected for and shall be free of any and all problems identified in the Condition Inspection Record contained within TM 4700-15/1H. The winch load hoist assembly contains the following subassemblies.

(1) Winch Motor. Winch motor shall be free of any and all problems identified in the winch motor troubleshooting guide. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 7B.

(2) Hoist Winch. Hoist winch shall operate as intended. Hoist winch shall be disassembled to the extent that will allow for replacement of the drum oil seals. Replacement of these seals shall be 100 percent. Repair/replace procedures are found in TM 09109A-24/2, Subsection 7C.

(3) Winch Control Valve. Winch control valve shall be free of any and all problems identified in the winch control valve troubleshooting guide. Replace the air shift solenoid (NSN 4810-01-367-4783) 100 percent. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 7D.

(4) Hoist Winch Control Assembly. Winch control assembly shall function as intended. Assembly shall contain no missing, broken, or loose components. Control Assembly shall function smoothly without binding up.

(5) Winch Wire Rope. The winch wire rope shall be inspected using inspection criteria listed in MCO P11262.2A, Section 2003. Replace wire rope that does not meet operation standards set forth in MCO P11262.2A. MCO P11262.2A identifies requirement to inspect annually. For the purpose of this SOW, all winch wire rope shall be inspected regardless of the annual requirement identified in MCO P11262.2A

(6) Hook Block Assembly. The Hook Block Assembly shall be inspected using criteria listed in MCO P11262.2A, Section 2002. Replace hook block assembly and/or hooks that do not meet operational standards set forth in MCO P11262.2A. Hook tram points shall be clearly visible to inspection personnel from MCSC, Code PMM152, Albany, GA. and/or their representative at final acceptance inspection. MCO P11262.2A identifies requirement to inspect annually. For the purpose of this SOW, all hook block assemblies and hooks shall be inspected regardless of the annual requirement identified in MCO P11262.2A

(7) All components shall meet or exceed requirements of Condition Inspection Report contained within TM 4700-15/1H.

q. Swing System. HSHM Crane swing system shall be inspected for and shall be free of any and all problems identified in the Condition Inspection Record contained within TM 4700-15/1H. The swing assembly contains the following subassemblies:

(1) Swing Motor. Swing motor shall be free of any and all problems identified in the swing motor troubleshooting guide. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 8B.

(2) Swing Valves and Components. Swing valves and components shall be free of any and all problems identified in the swing valve and component troubleshooting guide. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 8C.

(3) Swing Reducer. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 8D.

(4) Slewing Ring. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 8E.

(5) Swing Control Assembly. Swing control assembly shall function as intended. Assembly shall contain no missing, broken, or loose components. Swing Assembly shall function smoothly without binding up.

All components shall meet or exceed requirements of Condition Inspection Report contained within TM 4700-15/1H.

r. Air System. HSHM Crane air system shall be inspected for and shall be free of any and all problems identified in the air system troubleshooting guide contained within TM 09109A-24/2, Subsection 9A. Air assembly contains the following subassemblies:

(1) Air Compressor. Air compressor shall be free of any and all problems identified in the air system troubleshooting guide. Air compressor air filter shall be replaced 100 percent. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 9B.

(2) Air System Components. Air system components shall operate as intended. Air system components are governor, safety valve, air reservoirs, brake valve, dual brake valve, relay valve, spring brake valve, throttle control valves, throttle cylinder, and the parking brake control valve. These components are to be inspected, tested, adjusted, repaired, or replaced as per operational requirements contained in TM 09109A-24/2, Subsection 9C.

(3) Brake Chambers. Brake chambers shall operate as intended without binding or sticking. Brake chambers shall be inspected, tested, adjusted, repaired, or replaced as per operational requirements contained within TM 09109A-24/2, Subsection 9D.

s. Vehicle Brake System.

(1) Operational test vehicle brakes for proper operation. Remove vehicle wheels and remove brake drums for inspection. Replace drums that have cracks, severe heat checking, heat spotting, scoring, pitting or distortion. Original Equipment Manufacturer (OEM) does not recommend turning or reboring brake drums.

(2) Inspect spider or backing plate. All mounting bolts must be tight. Replace distorted spiders or backing plates.

(3) Repair or replace damaged or distorted dust shields.

(4) Inspect Actuator components. Plunger housing mounting bolts must be tightened to 30-40 lb-ft. Carefully inspect seals. Replace seals that are cut, torn or damaged in any way.

(5) Check the housing bores and the inner and outer diameters of the plungers for nicks, scratches or corrosion. Repair minor damage with crocus cloth. Replace plunger housing or the plunger when major damage is evident.

(6) Check the wedge ramps and all slots in the plungers for wear or damage. Replace as needed.

(7) Check the threads of the adjusting bolts and the actuator. Replace the parts when thread damage is evident. Replace the adjusting bolt when the detent spring is loose or damaged.

(8) Check the pawl and actuator teeth for wear or damage. The pawl and actuator teeth must have sharp, undamaged edges with no displaced metal anywhere on the teeth. Replace the pawl assembly when the spring is weak or broken. Replace damaged or excessively worn parts.

(9) Inspect brake shoes and lining. Check the shoe retaining hardware for damage or wear. Replace as needed. Check the shoes for damage or distortion. The web must be straight and not twisted off line. The ends of the web that engages the plungers must not be flat or mushroomed. Check for cracks or broken welds between the web and table. Check for any cracks in the web or table. Replace linings worn past the minimum thickness indicated by the groove or scallops in the lining. Replace lining that is contaminated with oil or grease.

(10) OEM recommends and this SOW requires that the Contractor reline both wheels of a single axle when one side requires relining or complete brake shoe replacement. A maximum gap of 0.010 inch (0.25 mm) between the shoe and lining is acceptable.

t. Power Steering System. HSHM Crane's power steering system shall be operational tested from both the lower and upper cab assemblies. Wheel alignment, toe-in, and parallel wheel alignment shall be checked and adjusted to specifications as required. Check steering adjustment. Adjust steering to specifications as required. Specifications are found in TM

09109A-24/2, Subsection 10A. Power steering system contains the following subsystems. These subsystems are to be inspected, tested, repaired, or replaced as needed.

(1) Steering Column. Inspect and operational test steering column. Steering column shall be securely mounted in its proper place with no looseness of the steering wheel, steering shaft and tube bearings. Horn button, contact cup and spring shall operate as intended. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 10B.

(2) Right Angle Steering Gear. Inspect and operational test steering gear. Steering gear shall operate as intended without excess play. Inspect steering gear box yoke for damage and proper operation. Replace as needed. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 10B.

(3) Power Steering Gear Assembly. The power steering gear shall be removed and all seals replaced 100 percent. Steering gear assemblies that requires repair other than seals are to be replaced. Power steering gear shall be free of any and all problems identified in the power steering gear troubleshooting guide contained within TM 09109A-24/2, Subsection 10B.

(4) Steering Control Valve. Inspect and operational test steering control valve. Inspect for leakage and proper operation. Valve shall operate as intended. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 10B.

(5) Steering Valves. These valves are the flow control valve, steering selector valve, and flow regulator. Inspect, test, repair, or replace valves as required. Assure steering selector valve switch located in the cabs are functional. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 10C.

(6) Steering Cylinders. Steering cylinders shall be rebuilt 100 percent. Steering cylinders beyond rebuild shall be replaced with new steering cylinders. Replace hydraulic hoses 100 percent. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 10D.

(7) Steering Drive Shaft. The steering drive shaft is located between the right angle steering gear assembly and the power steering gear assembly. Inspect shaft to assure shaft is straight and true. Inspect universal joints for proper operation. Replace universal joints that are binding or have excessive movement in the joint.

u. Outrigger System. HSHM Crane outrigger system shall be free of any and all problems identified in the outrigger system troubleshooting guide contained within TM 09109A-24/2, Subsection 11A. Outrigger assembly contains the following subassemblies. These assemblies are to be inspected, tested, adjusted, repaired, or replaced as per operational requirements identified in TM 09109A-24/2, Subsection 11A. Electrical switches located in the cab assemblies control most of the valves. Test these switches to assure they function correctly before testing these control valves.

(1) Extend/Retract Control Valve. Test valve for correct operation and leakage. Repair/replace as required. Repair/replace procedures are found in TM 09109A-24/2, Subsection 11B.

(2) Outrigger Control Valve. Test valve for correct operation and leakage. Repair/replace as required. Repair/replace procedures are found in TM 09109A-24/2, Subsection 11B.

(3) Relief Valve. Test valve for proper operation and leakage. Check pressure setting and adjust as needed. Replacement and adjustment procedure is found in TM 09109A-24/2, Subsection 11B.

(4) Outrigger Cylinders. Rebuild outrigger vertical and horizontal cylinders 100 percent. Replace horizontal cylinder holding (lock) valves 100 percent. Repair/replacement procedures are found in TM 09109A-24/2, Subsection 11C.

(5) Outrigger Pads and Pins. All HSHM Cranes placed in the repair cycle shall be provided with all outrigger pads and pins. In cases where pins and pads are missing, the Contractor shall replace missing pins and pads and return vehicles to the Marine Corps with all pads and pins.

(6) Outrigger Beams. Outrigger beam shall meet requirements of the Condition Inspection Report contained within TM 4700-15/1H.

All outrigger components shall meet or exceed requirements of Condition Inspection Report contained within TM 4700-15/1H.

v. Load Moment System (LMS). HSHM Crane Load Moment System shall be free of any and all problems identified in the Load Moment System troubleshooting guide contained within TM 09109A-24/2, Supplement-1, Table 1. Load Moment System Assembly contains the following subassemblies. These assemblies are to be inspected, tested, adjusted, repaired, or replaced as per operational requirements identified in TM 09109A-24/2, Supplement 1.

- (1) Cable Reel Assembly
- (2) Reel Control Wiring Harness
- (3) Anti-Two Block Switch Assembly
- (4) Hydraulic Pressure Transducers
- (5) Computer Console Assembly

The LMS shall be complete as per TM 09109A-24/2 and TM 09109A-24/2, Supplement-1. The LMS shall be operational tested and shall function as intended without exception. The LMS computer shall contain the Generation III Erasable Programmable Read Only Memory (EPROM)

chip. This chip is recognized by the blue dot affixed to the chip. LMS Computers that require repair/replacement shall be repaired or replaced in accordance with SI-09109A-15/1.

#### NOTE

**The electronic components within the LMS Computer are Electrostatic Discharge Sensitive (EDS) items. Qualified EDS Technicians are required to verify EPROM type and replace EPROM if needed.**

w. Upper and Lower Cab Assemblies.

(1) Repair or replace damaged sheet metal panels, doors, covers, and other metal items as needed. Replace sheet metal panels where corrosion has penetrated panel. Repair or replace all worn or unserviceable door hardware including hinges, door strikes, handles, and door slides. Replace all glass damaged from staining, cracks, breakage, and pitting. Replace missing glass panels. Glass panels should be replaced with OEM supplied glass panel to assure factory specifications are maintained.

(2) Inspect and operational test windshield wiper and washer assemblies for proper operation. System shall operate as intended. Adjust blade park to specifications. Replace wiper blades 100 percent.

(3) Inspect, clean, and operational test defroster fan assembly. Defroster fan assemblies shall operate as intended. Replace defroster fan blades 100 percent

(4) Inspect and operational test operator's seat and seat belt. Seat shall operate as intended. Replace seat backrest and seat cushion if torn.

(5) Inspect, clean and functionally test cab air conditioning/heater system. Repair deficiencies found during the testing. Inspect and clean blower impellers. Replace any impellers found damaged. Replace blower motors that overheat, bind up during operation, and contains bent output shafts.

#### WARNING

##### DANGEROUS CHEMICAL

**The air conditioner system that has not been modified contains refrigerant (R12) identified as an Ozone Depleting Substance. Handling of this refrigerant shall be in strict compliance with OSHA and DoD policies governing the use of this refrigerant in motor vehicles.**

(6) Inspect lower cab rear view mirror assemblies for damage. Repair/replace as needed.

x. Vehicle Sheet Metal Components. Repair or replace damaged sheet metal panels, covers, boom rest, skirts, fenders, ladders, bumpers and other metal items as needed. Replace sheet metal panels where corrosion has penetrated panel. Functional test toolbox hinges, sliding hood slides, stationary hood latches and mirror hardware. Repair/replace as needed.

Replace/repair all broken brackets and braces. Repairs shall be in accordance with best commercial practices.

y. Rust Proofing and Painting (Exterior/Interior)

(1) All vehicles shall be rust proofed as required. Rust proofing shall be in accordance with procedures for corrosion prevention and control as identified in TM 3080-34. All vehicles identified for shipment to III MEF shall be undercoated in accordance with TM-3080-50, page 5-17, paragraph 5-5-11. Vehicles requiring undercoating will be identified prior to induction into the repair cycle. All vehicles shall be primed and painted per latest edition of TM 4750-15/1.

(2) All exterior surfaces of the HSHM Cranes shall be painted with Chemical Agent Coating (CARC) paint. Paint color shall be Desert Sand or Green 383. The Marine Corps Systems Command, Code PMM152 and/or their representative(s) upon induction into the IROAN cycle will identify color of individual HSHM Cranes.

(3) All HSHM Cranes cabs interiors shall be painted in the existing color. This paint shall be a lead and chromate freebased paint.

z. Data Plates and Decals.

DATA PLATE. Each repaired HSHM Crane shall have an IROAN data plate affixed next to the original vehicle data plate. The data plate shall meet the requirements of MIL-STD-130 and TM 09109A-24/2. Replace all data plates and decals that are missing and illegible. IROAN data plates shall be prepared by the Contractor and contain the following information:

VEHICLE SERIAL NO \_\_\_\_\_  
REPAIRED IN ACCORDANCE WITH SOW-3-837-2-09109A-2/1.  
CONTRACTOR \_\_\_\_\_  
DATE \_\_\_\_\_  
HOUR METER READING AT TIME OF REBUILD \_\_\_\_\_

NOTE: The HSHM Cranes contain hour meters in both the upper and lower cabs. Hour meter reading shall be taken from the hour meter with the most hours, if that hour meter is functional. Hour meters on vehicles rebuilt under provisions of this SOW shall not be turned back to zero. Both hour meters shall read the same hours.

RECORD JACKET: All major equipment or components serial numbers that are replaced during IROAN are to be identified by the Contractor to be recorded in the record jacket of the HSHM Cranes (This include engines, transmissions, etc.). Information will list the HSHM Cranes serial number, Name of equipment/component(s) replaced, serial number of deficiency equipment/component(s), serial number of replacement equipment/component(s), and if the equipment/component(s) is new or rebuilt.

### 3.3.3 Phase III - Inspection, Testing and Acceptance.

- a. Inspection, testing and acceptance of the HSHM Cranes shall be conducted in accordance with TM 09109A-24/2, MCO P11262.2A, and this SOW.
- b. The Contractor shall be responsible for conducting required tests and shall ensure all necessary personnel are available to complete the final acceptance. Acceptance test shall be held at the Contractor's facility. MCSC, Code PMM152, Albany, GA. and/or their representative(s) shall be given a minimum of two weeks notice prior to beginning acceptance testing. The test area shall be cleared of all equipment part, components, etc, not required for the test.
- c. All HSHM Cranes IROANed under the provisions of this SOW shall be Load Tested and Condition Inspected as per MCO P11262.2A. A completed Condition Inspection Record and Certification of Load Test shall be provided for insertion in the vehicle record jacket. A completed Condition Inspection Record and Certification of Load Test shall be over packed with each vehicle. Condition Inspection Record and Certification of Load Test forms can be found in TM 4700-15/1H. Vehicle Boom Assembly shall be stenciled with one inch letters in a location between the mechanical boom angle indicator and upper cab that is readily visible to the operator when the boom is fully retracted, that the equipment has been Load Test Certified and the date certified. Stencil shall be in a lusterless black paint. Stencil sample: Load Tested 01 Jan 03.
- d. The Contractor shall be responsible for correcting any deficiencies identified during inspection/testing. MCSC, Code PMM152, Albany, GA. and/or their representative(s) may require the Contractor to report tests or portions thereof, if the original tests fail to demonstrate compliance with this SOW.
- e. HSHM Cranes shall be lubricated and greased in accordance with the vehicle lubrication chart contained within TM 09109A-10/1, Section 3. All coolant and oil levels shall be full to proper levels.
- f. Vehicle Markings. Registration numbers and other markings shall be applied in accordance with TM 4750-15/1 and MIL-STD 642. Lifting and tie down attachments shall be identified with one-inch letters indicating "SLING POINT" or "TIE DOWN."

### 3.3.4 Phase IV - Packaging, Handling, Storage and Transportation (PHS&T).

- a. The Contactor shall be responsible for preservation and packaging of items being repaired under the terms of this statement of work. Items being prepared for long-term storage shall be in accordance with the Level "A" requirements of ATDP-2241. Items scheduled for domestic shipment, immediate use or overseas shipment with the exception of Maritime Prepositioned Forces (MPF), shall be Level "B", Drive-on/ Drive-off. Items being prepared for overseas shipment shall have a label affixed which reads, "NOT FOR WEATHER DECK STOWAGE." Cranes scheduled for shipment to MPS shall be Level "B", MPS Modified Drive Away.



b. The Terms Drive-on/Drive-off and MPF Modified Drive Away are defined as follows:

(1) Drive-on/Drive-off: Batteries will be hot and disconnected from vehicle electrical system. Terminals and leads will be taped. Fuel tank shall be filled ¼ full. The air intake system, exhaust and brake systems, drive train and gauges are to be depreserved.

(2) MPS Modified Drive Away: Batteries shall be hot and connected to vehicle electrical system. Fuel tank shall be filled 1/4 full of JP5/8. The air intake system, exhaust and brake systems, drive train and gauges are to be depreserved. Fire extinguisher bracket and seats (all) shall be installed.

c. Marking shall be in accordance with MIL-STD-129.

d. The Marine Corps will provide the contractor with shipping address(es) for delivery of delivery of the required equipment. The Contractor shall be responsible for arranging for shipment to the pre-designated site(s). The Marine Corps will be responsible for transportation costs associated with shipping the subject equipment to and from the Contractor.

### 3.4 Configuration Management

#### 3.4.1 Configuration Status Accounting (CSA)

a. The Contractor shall determine the application status of approved configuration changes by visual inspections to the extent possible. MCSC, Code PMM152, Albany, GA. and/or their representative(s) will identify the configuration changes to be inspected by furnishing a Configuration Checklist (Appendix C) to the Contractor. The Contractor shall use one checklist for each HSHM Crane to record the inspection findings along with other required data.

b. The Contractor shall record serial numbers of the assemblies listed on the Configuration Checklist. The Contractor shall record the information on the same form that was used to record the application status of configuration changes.

3.4.2 Configuration Control. The contractor shall apply configuration control procedures to established configuration items. The contractor shall not implement configuration changes to an item's documented performance or design characteristics without prior written authorization. If it is necessary to temporarily depart from the authorized configuration, the contractor shall prepare and submit a Request For Deviation. MIL-HDBK-61 and ANSI/EIA-649 provide guidance for preparing this configuration control document.

3.5 Government Furnished Equipment /Government Furnished Materiel (GFE/GFM). The Management Control Activity (MCA/Code 581-1B) will coordinate GFE/GFM requests and maintain a central control system on all government owned assets in the contractor's possession. The MCA will forward a GFE Accountability Agreement to the contractor for signature on an annual basis to establish a chain of custody and identify property responsibilities for Marine

Corps assets. The contractor is to acknowledge receipt of GFM to the MCA within 15 days of receipt. This can be done by mailing a copy of the DD1348 to Distribution and Materiel Management Department, Management Control Activity (Code 581-1B), 814 Radford Blvd., STE 20320, Albany, GA 31704-0320, or faxing a copy to commercial telephone number (229) 639-5498 or DSN 567-5498.

**3.6 Contractor Furnished Materiel (CFM).** The contractor may requisition materiel as required in the performance of the SOW through the DoD Supply System. DoD 4000.25-1-M (MILSTRIP), Chapter 11, provides guidance to contractors on the requisitioning process. The contractor's decision to utilize CFM procured from the DoD Supply System shall be based upon cost effectiveness, availability of materiel and the required completion/delivery date.

**3.7 Quality Assurance Provisions** The performance of the Contractor and the quality of work delivered, material provided and documents written shall be subject to in-process review and inspection by MCSC, Code PMM152, Albany, GA and/or their representative(s) during contract performance. Inspection may be accomplished at any work location. Authorized MCSC, Code PMM152, Albany, GA and/or their representative(s) shall be permitted to observe the work/task accomplishment or to conduct inspections within contractor normal working hours. Acceptance test shall be held in-plant. Inspection by MCSC, Code PMM152, Albany, GA and/or their representative(s) of all acceptance tests plans, materials and associated lists furnished hereunder does not relieve the Contractor from any responsibility regarding defects or other failures to meet contract requirements which may be disclosed prior to final acceptance. The Contractor shall provide and maintain a Quality System that, as a minimum, adheres to the requirements of ANSI/ISO/ASQC Q9001-2000 Quality Management Systems-Requirements. The Contractor's work shall be subject to in-process reviews and inspections for compliance with Quality Systems by MCSC, Code PMM152, Albany, GA and/or their representative(s). Noncompliance with procedures resulting in degraded quality of work may result in a stop-work order requiring action by the Contractor to correct the work performed and to enforce compliance with quality assurance procedures or face contract termination. Notwithstanding such MCSC, Code PMM152, Albany, GA and/or their representative(s) inspection, it shall be the Contractor's responsibility to ensure that the HSHM Crane meets the performance requirements delineated and addressed in TM 09109A-24/2 and this SOW.

The contractor will not be subject to government oversight if the contractor has been ISO-9001 qualified or certified with a 2<sup>nd</sup> or 3<sup>rd</sup> party certification. The discovery of non-conforming product or service shall lead to government oversight until the contractor is re-qualified or re-certified by a 2<sup>ND</sup> or 3<sup>Rd</sup> party auditing service.

Quality assurance operations performed by the Contractor shall be subject to the MCSC, Code PMM152, Albany, GA and/or their representative(s) verification at any time. MCSC, Code PMM152, Albany, GA and/or their representative(s) verifications will include the following:

- a. Inspection of materials, products, assemblies, and documentation to assess compliance with quality standards.

b. Surveillance of operations to determine that quality assurance, practices, methods, and procedures are being properly applied.

c. Inspections of deliverable products to assure compliance with all requirements of TM 09109A-24/2 and this SOW.

d. Failure of the contractor facility to promptly correct deficiencies discovered shall be a reason for suspension of acceptance until corrective action has been made.

3.8 Acceptance - The performance of the Contractor and the quality of work delivered, including all equipment furnished and documentation written or compiled, shall be subject to in process review and inspection during performance. Inspection may be accomplished in plant or at any work site or location, and MCSC, Code PMM152, Albany, GA and/or their representative(s) shall be permitted to observe the work or to conduct inspection at normal working hours. Final inspection and acceptance testing shall be conducted at the Contractor's facility. Final acceptance shall be conducted on 100 percent of items to verify that the units meet all requirements.

Acceptance testing. The HSHM Cranes rebuilt under the provisions of this SOW shall be accomplished in accordance with TM 09109A-24/2, MCO P11262.2A, and this SOW.

3.9 REJECTION Failure to comply with any of the specified requirements listed herein shall be reason for rejection by the MCSC, Code PMM152, Albany, GA and/or their representative(s). The Contractor at no additional cost to the Marine Corps provide the following:

a. Develop an approach for modification or correction of all deficiencies.

b. On approval of a documented approach, the Contractor shall correct the deficiencies and repeat verification until acceptable compliance with acceptance test procedures is demonstrated.

4.0 REPORTS - The following reports shall be provided to Commanding General (PMM152), Albany, GA. and/or their representative. Reports shall be forwarded to: ATTN: Logistics Management Specialist, Bldg 3700 Room 310W, 814 Radford Blvd., Suite 20343, Marine Corps Logistics Command, Albany, GA 31704-0343.

4.1 Pre-Induction Checklist. The Contractor shall complete the Pre-Induction Checklist (Appendix A) for each HSHM Cranes inducted into the maintenance cycle. This document shall be available during final acceptance testing. One copy of each document shall be provided to MCSC, Code PMM152, Albany, GA and/or their representative(s) after final acceptance of the HSHM Cranes, or upon request.

4.2 Final Inspection Checklist. The Contractor shall complete the Final Inspection Checklist (Appendix B) for each HSHM Cranes inducted into the maintenance cycle. This document shall be available during final acceptance testing. One copy of each document shall be provided to

MCSC, Code PMM152, Albany, GA and/or their representative(s) after final acceptance of the HSHM Cranes, or upon request.

4.3 Configuration Checklist. The Contractor shall complete the Configuration Checklist (Appendix C) for each HSHM Cranes inducted into the maintenance cycle. This document shall be available during final acceptance testing. One copy of each document shall be provided to MCSC, Code PMM152, Albany, GA and/or their representative(s) after final acceptance of the HSHM Cranes, or upon request.

4.4 Certification of Load Test /Condition Inspection Report. A completed Certification of Load Test and Condition Inspection Record shall be over packed with each HSHM Cranes inducted into the maintenance cycle. All inspection items listed in this report may not apply to the HSHM Cranes. Inspections items that do apply shall be functional and pass inspection requirements. Mark inspection items that do not apply as N/A. The most up-to-date Certification of Load Test and Condition Inspection Record is found in TM 4700-15/1H. The uses of these two forms are preferred over the forms located in MCO P11262.2A.

# PRE-INDUCTION CHECKLIST HIGH SPEED, HIGH MOBILITY CRANES

Vehicle NSN \_\_\_\_\_

Vehicle Serial Number \_\_\_\_\_

Vehicle Hours \_\_\_\_\_

Use this sheet to record Operational Checkout results. Perform the operational checks before installing any test equipment.

CRANE, TRUCK MOUNTED (HSHMC)		M	S	A	R	R	E			
Basic Crane NSN 3810-01-268-1737		I	E	D	E	P	M			
Pile Driver Crane NSN 3810-01-320-1920	S	S	V	J	P	A	D			
	A	I	I	U	A	C	I			
	T	N	C	S	I	E	F			
		G	E	T	R	D	Y			
<b>MANDATORY REBUILD OR OVERHAUL ASSEMBLIES</b>										
<b>REMARKS</b>										
1. <i>Engine Assembly</i>									<b>OVERHAUL</b>	
2. <b>Fuel System</b> Condition Leakage Fittings <b>Mounting</b> Clamps and Bolts <b>Components</b> 1. Fuel Pump 2. Fuel Tank 3. Fuel Supply Lines										
3. <b>Engine Cooling System</b> Condition Leakage Clamps and Fittings <b>Components</b> 1. Radiator 2. Water Inlet Manifolds 3. Oil Cooler 4. Coolant Heater Pump 5. Fan Assembly 6. Fan Shroud 7. Water Pump Drive Assy										

<b>4. Engine Accessories</b> <b>a. Cold Start Assembly</b> Condition Lines and Hoses Mounting <b>b. Air Cleaner Assy</b> Condition Mounting Hoses									
<b>5. Alternator</b> Condition Operation Mounting Tested as per TM 09109A-24/4									
<b>6. Engine Starter</b> Condition Operation Mounting Tested as per TM 09109A-24/4									
<b>7. Vehicle Electrical System</b> Condition Operation Mounting <b>Components</b> 1. Panel Gauges 2. Warning Lights 3. Slaving Receptacle 4. Switches 5. Fuses and Circuit Breakers 6. Wiring Harnesses 7. Windshield Wiper Assy 8. Vehicle Lights 9. Vehicle Work Lights 10. Defrost Fan Assemblies 11. Collector Ring									

Assembly									
<b>8. Carrier</b> <b>Transmission and</b> <b>Torque Converter.</b>  <b>Shift Control</b> <b>Assemblies</b> Condition Operation Mounting								<b>OVERHAUL</b>	
<b>9. Drive Shafts</b> Condition Operation									
<b>10. Axles</b> Condition Operation									
<b>11. Suspension</b> Condition Operation <b>Components</b> 1. Torque Rods 2. <b>Suspension</b> <b>Cylinders</b> 3. Accumulators 4. Suspension Lock Valves 5. Pressure Reducing Valve 6. Check Valve 7. Hoses, Fitting, and Clamps								<b>2. REBUILD</b>	
<b>12. Hydraulic System</b> Condition Operation Leakage Hoses and Lines <b>System Requires</b> <b>Draining or</b> <b>Flushing ?</b>									
<b>13. Boom Assembly</b> <b>Components</b> Three Sectional Boom Assembly								<b>REBUILD</b>	

<p><b>2. Boom Hoist Cylinder</b></p> <p><b>3. Boom Telescope Cylinders</b></p> <p><b>4. Boom Hoist and Telescope Control Valves</b></p> <p><b>Boom Adjustment and Alignment</b></p> <p><b>Meets MCO P11262.2A Requirements?</b></p>								<p><b>2. REBUILD</b></p> <p><b>3. REBUILD</b></p> <p><b>4. REBUILD</b></p>	
<p><b>14 Load Hoist Winch Assembly</b></p> <p>Condition</p> <p>Operation</p> <p>Leakage</p> <p>Mounting</p> <p>Hoses and Lines</p> <p><b>Components</b></p> <p>1. Winch Motor</p> <p>2. Hoist Winch</p> <p>3. Winch Control Valve</p> <p>4. Hoist Winch Control Assembly</p> <p>5. Winch wire rope</p> <p>6. Hook Block Assembly</p> <p><b>Meets MCO 11262.2A Requirements?</b></p>									
<p><b>15 Boom Swing System</b></p> <p>Condition</p> <p>Operation</p> <p>Leakage</p> <p>Hoses and Lines</p> <p><b>Components</b></p> <p>1. Swing Motor</p> <p>2. Swing Valves</p> <p>and Components</p> <p>3. Swing Reducer</p> <p>4. Slewing Ring</p> <p>5. Swing Control</p>									



Assemblies									
<b>16 Vehicle Air System</b> Condition Operation Leakage Hoses and Lines <b>Components</b> 1. Air Compressor 2. Air System Control Components 3. Vehicle Brake Chambers									
<b>17 Vehicle Brake System</b> Condition Operation <b>Inspected in accordance with Para. 3.3.2, Subpara s of SOW ?</b>									
<b>18 Power Steering System</b> Condition Operation Leakage Hoses and Lines <b>Components</b> 1. Steering Columns 2. Right Angle Steering Gear Assy 3. Power Steering Gear Assy 4. Steering Control Valve 5. Steering Valves 6. <i>Steering cylinders</i> <b>Operational Tested From Both Upper and Lower Cabs ?</b> <b>Wheel Alignment checked in Accordance with Para 3.3.2,</b>								<b>6. REBUILD</b>	

Subpara S of SOW ?										
<b>19 Outrigger System</b> Condition Operation Leakage Hoses and Lines <b>Components</b> 1. Extend/Retract Control Valves 2. Outrigger Control Valve 3. Relief Valve 4. <i>Outrigger</i> <i>Cylinders</i> 5. Outrigger Pads and Pins 6. Outrigger Beams  <b>Outrigger System</b> <b>Meets MCO P11262.2A</b> <b>Requirements ?</b>									<b>4. REBUILD</b>	
<b>20 Load Moment</b> <b>System</b> Condition Operation Mounting <b>Components</b> 1. Cable Reel Assembly 2. Reel Control Wiring Harness 3. Anti-Block Switch Assembly 4. Hydraulic Pressure Transducers 5. Computer Console Assembly <b>Computer Console</b> <b>Contains The</b> <b>Generation III</b> <b>EPROM ?</b>  <b>Meets MCO P11262.2A</b>										

<b>Requirements ?</b>									
<b>21 Upper/Lower Cab Assemblies</b> Condition Mounting <b>Subassemblies</b> 1. Doors and Door Hardware 2. Vehicle Glass 3. Windshield Wiper and Washer Assemblies 4. Operator Seats 5. Cab Air Conditioning 6. Rear View Mirror									
<b>22 Vehicle Sheet Metal Components</b> Condition Mounting <b>Components</b> 1. Sheet Metal Panel and Covers 2. Boom Rest 3. Skirts 4. Fenders 5. Bumpers 6. Ladders 7. Tool Box 8. Sliding Hood and Hood Slides 9. Stationary Hood and Latches 10. Mirror Hardware									
<b>23 Vehicle Paint</b> Condition Coverage									
<b>24 Vehicle Data Plates</b> Condition Mounting									

**ADDITIONAL REMARKS:**

# FINAL INSPECTION CHECKLIST HIGH SPEED, HIGH MOBILITY CRANES

Vehicle NSN \_\_\_\_\_

Vehicle Serial Number \_\_\_\_\_

Vehicle Hours \_\_\_\_\_

<b>CRANE, TRUCK MOUNTED HSHMC</b>  Basic Crane    3810-01-268-1737  Pile Driver Crane 3810-01-320-1920	S A T	S E R V I C E	T E S T E D	L U B R I C A T E D	U N S A T	REMARKS
<b>1. Engine Assembly</b> Condition Operation Leakage <b>Mounting</b> Screws Washers Nuts <b>Paint</b> Spec. Conformance Coverage <b>Lubrication</b> Application and Type Level <b>Oil Filters Replaced 100 Per Cent</b> <b>YES                      NO.</b>						
<b>2. Fuel System</b> Condition Operation Leakage <b>Mounting</b> Clamps and Bolts <b>Components</b> 1. Injector and Inject Lines 2. Shutoff Solenoid 3. Fuel Pump						

4. Fuel Tank 5. Fuel Supply Lines 6. Water Separators <b>Fuel Filters Replaced 100 Per Cent</b> <b>YES          NO</b>						
<b>3. Engine Cooling System</b> Condition Leakage Clamps and Fittings <b>Components</b> 1. Radiator 2. Water Inlet Manifolds 3. Oil Cooler 4. Coolant Heater Pump 5. Fan Assembly 6. Fan Shroud 7. Water Pump Drive Assembly <b>Cooling System Protected to at least -20F as per SOW Requirements.    YES    NO</b>						
<b>4. Engine Accessories</b> <b>a. Cold Start Assembly</b> Condition Lines and Hoses Mounting <b>b. Air Cleaner Assembly</b> Condition Mounting Hoses <b>c. Exhaust System</b> Condition Mounting <b>Air Filters Replaced 100 Per Cent</b> <b>YES          NO</b>						
<b>5. Alternator</b> Condition Operation Mounting <b>Alternator Drive Belts Replaced 100 Per Cent    YES    NO</b>						

<b>6. Engine Start</b> Condition Operation Mounting						
<b>7. Vehicle Electrical System</b> Condition Operation <b>Components</b> 1. Panel Gauges 2. Warning Lights 3. Slaving Receptacles 4. Switches 5. Fuses and Circuit Breakers 6. Wiring Harnesses 7. Windshield Wiper Assembly 8. Vehicle Lights 9. Vehicle Work Lights 10. Defrost Fan Assembly 11. Collector Ring Assembly 12. Batteries and Cables						
<b>8. Carrier Transmission and Torque Converter.</b> Condition Operation Mounting Leakage						
<b>9. Drive Shafts</b> Condition Mounting						
<b>10. Axles</b> Condition Operation Leakage Mounting						
<b>11. Suspension</b> Condition Operation Leakage <b>Components</b> 1. Torque Rods 2. Suspension Cylinders 3. Accumulators 4. Suspension Lock Valves 5. Pressure Reducing Valve						

6. Check Valve 7. Hoses, Fittings, and Clamps <b>Vehicle Maintains a Level          Position without a list to one          side.</b>						
<b>12. Hydraulic System</b> Condition Operation Hoses and Lines						
<b>13. Boom Assembly</b> Condition Operation Leakage Hoses and Lines Mounting <b>Components</b> 1. Three Sectional Boom Assembly 2. Boom Hoist Cylinder 3. Boom Telescope Cylinders 4. Boom Hoist and Telescope Control Valves 5. Boom Adjustment and Alignment  <b>Meets MCO P11262.2A          Requirements. ____ YES ____          NO</b>						
<b>14 Load Hoist Winch Assembly</b> Condition Operation Leakage Mounting Hoses and Lines <b>Components</b> 1. Winch Motor 2. Hoist Winch 3. Winch Control Valve 4. Hoist Winch Control Assy 5. Winch Wire Rope 6. Hook Block Assy						

<b>Meets MCO P11262.2A Requirements. ____ YES ____ NO</b>						
<b>15 Boom Swing System</b> Condition Operation Leakage Hoses and Lines <b>Components</b> 1. Swing Motor 2. Swing Valves and Components 3. Swing Reducer 4. Slewing Ring 5. Swing Control Assembly						
<b>16. Vehicle Air System</b> Condition Operation Leakage Hoses and Lines <b>Components</b> 1. Air Compressor 2. Air System Control Components 3. Vehicle Brake Chambers						
<b>17. Vehicle Brake System</b> Condition Operation  <b>Inspected In Accordance With Para 3.3.2, Subpara. s of this SOW. ____ YES ____ NO</b>						
<b>18. Power Steering System</b> Condition Operation Leakage Hoses and Lines <b>Components</b> 1. Steering Columns 2. Right Angle Steering Gear 3. Power Steering Gear 4. Steering Control Valve 5. Steering Valves 6. Steering Cylinders						



<b>Operational Tested from Upper and Lower Cabs. ____ YES ____ NO</b>  <b>Wheel Alignment Checked and Corrected as Required. ____ YES ____ NO</b>						
<b>19. Outrigger System</b> Condition Operation Leakage Hoses and Lines <b>Components</b> 1. Extend/Retract Control Valves 2. Outrigger Control Valves 3. Relief Valves 4. Outrigger Cylinders 5. Outrigger Pads and Pins 6. Outrigger Beams  <b>Meets MCO P11262.2A Requirements. ____ YES ____ NO</b>						
<b>20. Load Moment System</b> Condition Operation Mounting <b>Components</b> 1. Cable Reel Assembly 2. Reel Control Wiring Harness 3. Anti-Two Block Switch Assy 4. Hydraulic Pressure Transducers 5. Computer Console Assy  <b>Computer Console Contains the Generation III EPROM. ____ Y ____ N</b>  <b>Meets MCO P11262.2A Requirements. YES ____ NO ____</b>						
<b>21. Upper/Lower Cab</b>						

<b>Assemblies</b> Condition Mounting <b>Subassemblies</b> 1. Door and Door Hardware 2. Vehicle Glass 3. Windshield Wiper and Washer Assemblies. 4. Operator Seats 5. Cab Air Conditioning 6. Rear View Mirrors						
<b>22. Vehicle Sheet Metal Components</b> Condition Mounting <b>Components</b> 1. Sheet Metal Panels and Covers 2. Boom Rest 3. Skirts 4. Fenders 5. Bumpers 6. Ladders 7. Tool Box 8. Sliding Hood and Hood Slides 9. Stationary Hood and Latches 10. Mirror Hardware						
<b>23. Vehicle Paint</b> Condition Coverage Spec. Conformance						
<b>24 Vehicle Data Plates/Decals</b> Condition Mounting  <b>IROAN Data Plate Installed.</b>						
<b>25. Vehicle Load Testing</b> Condition Marking <b>Vehicle Load Tested in Accordance with MCO P11262.2A.</b> <b>YES      NO</b>						

<b>Load Test Date Annotated on Boom in Accordance with Para.3.3.3, c. of This SOW.</b> YES      NO						
---	--	--	--	--	--	--

## FINAL INSPECTION CHECKLIST

**ADDITIONAL REMARKS:**

## CONFIGURATION CHECKLIST CRANE, TRUCK MOUNTED, MODEL HSHMC

**VEHICLE:**

Marine Corps Registration Number \_\_\_\_\_.

OEM Model Number \_\_\_\_\_.

Vehicle Hours at Pre-Induction: \_\_\_\_\_ Hrs.

**VEHICLE ENGINE:**

Original Vehicle Engine Serial Number \_\_\_\_\_.

Engine Required Replacement: \_\_\_\_\_ YES \_\_\_\_\_ NO

Replacement Engine Serial Number \_\_\_\_\_.

**VEHICLE TRANSMISSION:**

Original Vehicle Transmission Serial Number \_\_\_\_\_.

Transmission Required Replacement: \_\_\_\_\_ YES \_\_\_\_\_ NO

Replacement Transmission Serial Number \_\_\_\_\_.

**APPROVED CONFIGURATION CHANGES:**

Approved deviations applied during IROAN:

Deviations: \_\_\_\_\_

ECPs generated by approved Waivers/Deviations: \_\_\_\_\_

Modification/Technical Instructions:

MI-09109-35/1 Applied Prior IROAN \_\_\_\_\_, During IROAN \_\_\_\_\_.

MI-09109-45/2 Applied Prior IROAN \_\_\_\_\_, During IROAN \_\_\_\_\_.

TI-09109-25/2 Applied Prior IROAN \_\_\_\_\_, During IROAN \_\_\_\_\_.

**(1 Data Item)**

The public reporting burden for this collection of information is estimated to average 110 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0701-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to the above address. Send completed form to the Government Issuing Contracting Officer for the

17. PRICE GROUP
18. ESTIMATED TOTAL PRICE